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Abstract:

Farms systems are open to financial systems. Financing matters. Analysis of questions about management of farms is a multi-dimensional task; focusing on economic efficiency only partly does the job. A financial system channeling funds efficiently from the non-farm sector to the farm sector, doing so in many and varied ways that meet the specific and different requirements of farm businesses is the key to a farm sector that is liquid and, as a consequence, makes it possible for farmers to use resources efficiently and to grow their wealth.

Financing Matters

Ву

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- 3 Investment in Agriculture
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Prologue

Bankers and farmers #1 (by Les Murray)

Some of us primary producers, us farmers and authors are going round to watch them evict a banker. It'll be sad. I hate it when the toddlers and wives are out beside the fence, crying, and the big kids wear that thousand-yard stare common in all refugees. Seeing home desecrated as you lost can do that to you.

There's the ute piled high with clothes and old debentures.

There's the faithful VDU, shot dead, still on its lead. This fellow's dad and granddad were bankers before him, they sweated

through the old hard inspections, had years of brimming foreclosure,

but here it all ends. He'd lent three-quarters and only asked for a short extension. Six months. But you have to

line the drawer somewhere. You have to be kind to be cruel.

It's Sydney or the cash these times. Who buys the Legend of the Bank

any more? The laconic teller, the salt-of-the-earth branch accountant

it's all an Owned Boys story. Now they reckon he's grabbed a gun

and an old coin sieve and holed up in the vault, screaming

about his years of work, his identity. Queer talk from a bank-johnny!

We're catching flak, too, from a small mob of his mates,

inbred under-manager types, here to back him up, Troublemakers,

Land-despoiling white trash. It'll do them no good. Their turn

Is coming. They'll be rationalized themselves, made adapt

To a multinational society. There's no room in that for privileged

traditional ways of life. No land rights for bankers.

(from Selected Poems of Les Murray, Black Inc, 2007. One of Les Murray's first published collections of poetry published in 1972 was entitled 'Poems Against Economics').

Bankers and farmers #2

Extract from 1916 from 'The Position of the Farmer in our Economic Society', by E.A.Adams in 'The Transition to Commercialized Agriculture', part of Chapter One 'The Emergence of the Problem of Agricultural Economics' in the book 'Agricultural Economics', edited by E.G Nourse, 1916, p.75:

Farmers are apt to denounce the great salaries paid in some walks of life, but they are nearly always the price paid for knowledge at market rates. The farmer who prefers the life of a banker has merely to know better than anyone else what property is safest to lend money on, and to make this ability known; some bank will soon want him. Farmers are large borrowers, and as they are apt to seek loans which they have not the knowledge to use wisely, the bank president must be a better judge of the possible profits of farming than the farmer himself (sic), lest the bank's funds be invested where they cannot be got back when wanted. This means a high salary for the bank officer, which goes to reduce the profit of the farmer, for ignorance must pay its own bills. If farmers could know enough about their own business to make loans to them certain to be so wisely used as to pay interest promptly and the principal at maturity, a less expensive man (sic) could lend them money, and the farmer's profits be so much increased.

1/ Introduction

Farm systems are open systems. Always have been. How could they be anything but?

When European farming in Australia started with free land, labour was scarce. Successful grazing and farming was based on using lots of fixed and working capital and little labour. These resources were supplied initially from sources external to the grazing and farming operations. Wool flowed from the farms and capital and labour flowed to them. Farming generated surpluses intermittently at first, then more consistently during the long boom of 1860-1890. Farming generated surpluses and attracted capital for fixed investment and working expenses from the domestic economy and from international economies, especially banks from the UK. The openness of farming systems to a well developed financial sector supplying fixed and working capital has been one of the keys to success of farming in Australia.

Australia has a small number of large scale commercial farms producing the majority of agricultural output, while small-scale farms that make up the great majority of farms produce account a small proportion of output. These small scale farms include a mix of farms run as sub-commercial operations because of the nature of the objectives and situation of the operators – lifestyle, off farm income is a major source of income, labour and management is still in their best use, all things considered and so on. Ninety-nine per cent of Australia's farms are operated as sole proprietorships, family partnerships, or family companies run along corporate lines. There are good economic reasons for this being the case. There are also good economic reasons for some farm businesses in some industries being part of a vertical integrated production, processing and marketing operation, as found in intensive animal and horticultural activities. There are also good economic reasons for some farm businesses being owned by equity investors and run along corporate lines while competing directly with similar sized family-owned farms. The phenomenon of non-farm entities aggregating equity capital from non-farm investors and buying farms has always been part of agriculture in Australia; usually in cycles related to economic cycles. At different times in history governments have actively encouraged investment of non-farm equity into farming, by providing taxation incentives and subsidies.

Farm businesses in Australia earn returns on capital that range from being as good as any investment in the economy to earning extremely low returns o capital. In any year the top 20 per cent of farms by economic performance can earn total returns of 10-15 per cent on total capital, comprising 5-6% capital income and up to 10 per cent return on total capital, or more sometimes, as annual operating profit.

Values of agricultural land in every State of Australia have grown in real and nominal terms over the past 30 years, albeit fluctuating around this upward trend, and varying from region to region. In NSW, data on agricultural land values indicates growth of agricultural property values of around 6 per cent p.a. nominal since the mid-1970s (Eves 2010), with some short periods in recent times where this growth of capital value increased at higher rates. Across Australia, agricultural land values generally increased steadily from mid-1970 to 1989, then fell sharply and recovered slowly by the end of the 1990s. Agricultural land prices have doubled in nominal terms from the late 1990s to 2007, a compound nominal growth rate of around 7 per cent p.a. Nominal debt too has risen steadily.

The focus in this paper is on implications the financial openness of farm systems has for managing farms and, thus, implications for analyzing farm management decisions and farm

performance. In elaborating on this theme, capital investment in agriculture is considered and key ideas about agricultural financing and implications for farm management are identified. Analysing just the comparative static, profit-maximizing economics, misses much – including very interesting and important finance, balance sheet, dynamic and risk angles. The paper proceeds as follows: first, a schematic illustration of farm business and financial intermediation is presented. Investment in agriculture is discussed. Key ideas and principles about financing agriculture are identified. Implications for farm management of these ideas and principles applying at farm level are discussed.

2 Financial Intermediation

Task: Farm Capital to be Financed:

Non-Depreciable Fixed Assets: Land

Depreciable Fixed Capital Assets: Plant, Livestock

Farm Demand for Finance

Borrowers of funds for:

Long term non depreciable assets

Medium term depreciable assets

Short term operating inputs

Affected by:

Expected returns- operating and capital

Debt servicing ability

Principle of increasing risk

Liquidity in composition of asset portfolio and reserve of borrowing capacity

Financial Intermediaries doing financial intermediation

- mobilize, pool,
 assemble funds
- aggregate funds into large units with uniform time dimensions
- -vary limits for different risk and purposes
- -administration costs

Supply of Finance

Savers/Lenders/Investors:

Individuals

Private Businesses

Governments

Financial intermediaries

Affected by:

Economic conditions

Regulation

Policy interventions

Legal and institutional constraints

Performance of financial intermediation

- efficiency of allocation of funds
- equimarginal productivity of capital;
- same interest for farm loans once risk adjusted;
- rates change as general economic conditions change;
- rates increase when conventional source exhausted;
- agricultural component of total loan books;
- markets working competitively

3/ Capital investment in Agriculture

Sources of capital to agriculture in the 19th century features prominently in writings about Australia's economic history. Some attention to how farmers finance investment in their businesses, and invest, is in the agricultural economics literature (e.g. Campbell 1957,1958, Gruen 1957), and in the 1960s (e.g. Herr), and through 1970s and into the 1980s (e.g. Powell 1982).

Investment in agriculture has been characterised by lengthy continuous periods of investment and decay, reflecting economic cycles. Powell (1982) recorded the 1920s as a decade of rapid development in land and high investment in land and improvements, especially in land clearing for, cropping, and irrigation. The 1930s saw the Great Depression and rundown of capital stock, while the 1940s brought investment in machinery, with labour constraints causing rundown in improvements.

The 1950s, 1960s and 1970s was a time of fixed, later pegged, exchange rates and persistent deficits in the capital account of the balance of payments which, in combination, made agriculture the hope of the side. Policies, and the regulated banking system, aimed to foster exports by supporting agricultural production. Banks were directed to set aside a proportion of total funds for lending to agriculture. Concessional interest rates were available too, though these had the effect of rationing capital away from agriculture. Tax incentives and subsidies encouraged investments in agriculture. Investment in machinery and adoption of new technology characterized the 1950s and 1960s. The end of the 1960s brought drought and low prices for farm products, which halted the investment boom of the mid-20th century. Bursts of prosperity occurred in the 1970s and 1980s, surrounded by surges of investment. Deregulation of the exchange rate and the banking system in the early 1980s changed things; financial markets developed to meet agricultural demands for capital at commercial market rates. Overall, the 1980s was characterised by a running down of the capital stock in agriculture (Fisher 1987), which continued until the general economic recovery in the early 1990s.

The 1990s saw sustained general economic growth in which farmers experienced several extremely severe and widespread droughts, along with shorter regionally based wet and dry spells, and periods of high and low commodity prices. The adoption of technology continued apace. Machinery capacity and efficiency expanded. Capital continued to be substituted for labour, especially in broad-area cropping. Investments in pasture continued to run down as climates and markets for grazing products fluctuated markedly. From the end at the 1990s, investment in purchasing agricultural land grew apace across all industries.

Despite prolonged and widespread droughts since 2000, growth in the general economy towards the end of the 20th century and into the first decade of the 21st century has also seen growth in the investment links between the farm and non-farm sectors. Equity investment in agriculture by non- agricultural entities has always been a feature of agriculture in Australia. The political and legislative intent from the 1860s was to establish numerous small to medium-sized property owning farm families. Investment vehicles to entice private equity into investing in agriculture emerged that were designed around offering tax concessions provided by tax law for investment associated with agriculture. At the same time as the tax system was moving away from treating agriculture in general as a special case deserving of special investment

concessions and allowances and subsidies, new tax-based incentives were being developed to attract new investment into specific areas of primary production; initially forestry and plantation horticulture. The new model was based on what is called Managed Investment Schemes.

The MIS approach in theory was seen as a means of putting together funds from large numbers of relatively small investors to make possible investment in large scale capital intensive activities that were risky and that would not otherwise be likely to happen. The tax system, giving immediate full deductibility of development expenditures, made the MIS investments attractive to high income earners facing high marginal tax rates.

In a manner not dissimilar to variants of the approach that had existed in the 1960s and 1970s, MIS schemes in the 1990s and 2000s came to display the full spectrum, from good to bad, of the key investment characteristics of informing investors, transparency, integrity and returns. In 2007 the Federal Government reviewed the MIS operation in response to agitation from competing agricultural investors not in receipt of equivalent taxpayer largesse. A good deal of taxpayer largesse comes in the form of bearing some of the burden of risk involved in the MIS assisted investments.

There has always been a small number of large equity (corporate) investors involved in specific types of agriculture requiring more capital investment than could be usually amassed by individuals and involving more risk than could be usually borne by individuals. For instance, there have always been a significant number of corporate owners involved in the beef industry of Northern Australia, simply because the size of capital investment required for the large holdings and cattle numbers and the risks involved ruled out smaller investors.

A significant recent change in the economy has been the rise of savings accumulated in superannuation and pension (US) funds. These pools of capital are massive and some entrepreneurial rural financiers have been endeavoring to divert a tiny fraction of these savings into agriculture; a field of investment that remains essentially novel and mysterious to the fund managers. The recent phenomenon of entrepreneurs accumulating significant funds running to hundreds of million dollars to pursue investment opportunities in agriculture seems based primarily on profitability and, unlike MIS, not dependent on taxation opportunity. Most of the agricultural opportunity seems to be based on the opportunities offered by owning agricultural land, following a period of sustained rise in nominal land values. These accumulators of equity capital have been selling the notion of opportunities in agriculture to various segments of the finance industry, including superannuation funds and rural property trusts. Forms of investment these funders have adopted range from direct equity in land which is then managed by employed managers, to purchase and lease- back with up-side profit shares, to innovative schemes providing working capital facilities in return for interest plus a share of the up-side risk, to franchising arrangements.

Direct investment by overseas interests has been a feature of agriculture in Australia right from the start, fluctuating with business cycles. The 2007-08 spike in agricultural commodity, and food, prices focused the minds of financiers in some countries, such as some Middle-eastern countries and China, and resulted in a mini-surge of direct investment into agricultural landholdings in Australia. This was not unprecedented, having occurred in roughly every decade through Australia's history.

Private equity partnerships are another form of farm finance. These are more common in dairying in NZ than in Australia. A variant of this has been a NZ bank seeking to take equity

positions in farm businesses. Another recent development has been direct investment by foreign states and nationals in owning farmland, sometimes overtly as a response to motivations associated with concerns about food security, e.g. by some middle-eastern investors.

As well, the number of farms in high rainfall areas and not too far from major centres of population that are owned by people from urban areas has grown significantly. Historically the combination of periodic agricultural booms, allied to a tax system that favoured investment in agriculture, especially land and improvements, has encouraged bursts of investment in agricultural land of equity from sources other than the existing farm population. Thus while farmers are increasingly diversifying out of farming and building up non-farm assets, and to a small extent non-farmers are diversifying into owning farm-land, but farming it for essentially non-commercial reasons.

4 Farm Financing

There is a large literature on agricultural finance, with some agricultural economists from the US being particularly prominent: for instance, D.G.Johnson, E.O.Heady and the important contributions of 'Barry, Hopkin and Baker', singly and collectively.

Barry (2003) records D.G.Johnson recognizing that 'financing matters' (p.7). Johnson (1947) highlighted capital rationing, the restriction of borrowing so that equity is maintained at a prescribed level and rates of return on capital kept at a high level. Capital rationing occurred because of uncertainty about borrowers' management ability and the risks of agricultural production and market prices. It had the effect of restricting farm size and occurred because of risk aversion of both the lender and the borrower. Capital rationing affected the combination of factors used and affected the scale of operations. Barry (2003) summed up Johnson's contribution as follows:

In essence, Johnson was predating the modern approach to understanding lender-borrower relationships, misaligned incentives, and incomplete contracting. He was explaining that 'financing matters'. Thus the preferences of the lender, expressed primarily through the level of available credit, could directly influence the managerial choices and rates of growth of farm businesses. These observations have been tested and largely confirmed by extensive empirical analyses over the past 50 years (p.7).

Barry (2003) appreciated the contribution of Heady to matters financial in farm management. Heady in Economics and Agricultural Production and Resource Use said pretty much everything that is needed to be said about farm management economics, including giving proper credit to the role of finance and financing. Following Kalecki (1937), Heady emphasized the critical role of the principal of financial increasing risk; in particular, the role of debt to equity ratios (including lease obligations on leased assets along with interest on debt capital) and increasing financial risk as a more significant determinant of farm size than economies of size and scale. Heady (1954) argued: 'Size of farm is as much a function of uncertainty and the capital market as of technical scale relationships'. The extra costs of extra uncertainty and risk associated with larger farms can outweigh the cost-reducing gains from larger size. Access to and return on capital controls growth of firms. Heady also pointed out how diversification in production to manage risk has implications for optimal debt:equity ratios. He also highlighted the role of liquidity, including the significant role of unused borrowing capacity. Heady formalized the role of gearing as:

p=I/C(e-r),

where p is the expected rate of return on the farmers capital, e is the expected return on total capital, r is the market rate of interest, I is the total capital invested in the farm, and C is the farmers equity capital. Barry, Hopkin and Baker (various editions, most recent Barry, P.J., P.N.Ellinger, J.A.Hopkin and Baker, C.B, 2000) in their classic text refined this formulation which makes explicit the relationship between gearing and growth.

Heady wrote that borrowers determining some subjective equilibrium in which borrowers' attitude to risk and expected risk of returns are balanced to maintain a consistent level of utility. Heady explained the capital rationing in terms of internal and external capital rationing – also further developed by Barry, Hopkin and Baker (various editions). Barry (2003) cites Heady as follows:

The farmer may refuse to use borrowed capital in a quantity to approximate equation of its marginal cost and marginal return...because of either of two reasons; one, risk aversion...; the other, termed credit rationing....capital rationing is largely the response of lending firms to uncertainty (Heady p.550).

The lender's uncertainty surrounding the physical production on a single farm may be even greater than that of the farmer; the operator is better acquainted with the particular situation and may view technical yields, if not price prospects with greater knowledge than the loaning firm (Heady p.550).

Using different language and terms to current-day, Johnson and Heady formalized relationships between credit, farm production and financial risk, and set out the important elements of lender-borrower relationships in agricultural finance (Barry 2003). In modern terms, financial contracts need to recognize the existence of asymmetric information and the importance of aligned and misaligned incentives (Barry 2003). Most notably, following Heady and Johnson, Barry, Hopkin and Baker, among others, were able to build extensively on strong foundations of farm financing.

In the Australian agricultural economics literature, Campbell in 'Some Reflections on Agricultural Investment' in 1958 pondered the question of changes in the formation and supply of capital for agriculture and changes in the level of farm investment. He put forward the 'residual funds hypothesis': 'the most plausible formulation would treat investment outlay as a residual defined as the net income realized from current operations less tax commitments and some conventional allowance for farm family living expenses' (1958, p.6). The residual funds hypothesis was proposed because standard profit maximization theories of investment, even when taking some account of uncertainty and risks and managerial considerations, did not seem to provide a useful explanation of managerial actions (Herr 1964 p.108). The residual funds hypothesis contends that farmers faced with fluctuating incomes allocate a relatively constant account to consumption and the fluctuating balance is available for investment.

Herr (1964) conceded the residual funds hypothesis had intuitive appeal and some empirical evidence, but queried the direction of causation expressed by the identity I=Yd-C (p.103), where Yd is disposable income and C is consumption. Herr (1964) said:

While it will be argued that the direction of causation runs from income to investment, an argument could be made for the reverse view. Nevertheless, the direction of causation is generally implied by the twin assumption that (i) there

exists investment opportunities, and (ii) the speed at which investment opportunities are seized depends on internal liquidity (p.103).

That is, capital rationing is an important phenomenon too.

The question of time period in which relevant decisions are made is also important. As Herr said: 'in the long –run income must be the source of all investment and consumption outlays' (p.103). But, in short-run periods, changes in liquid assets as well as outside funds come into the question. Herr sums up:

This distinction does not alter the main thesis of the residual funds hypothesis, namely that internal liquidity is the determining factor, but it shifts emphasis from spending out of income in the long-run to spending out of balances for short-run decisions (p.103).

Herr modified the residual funds hypothesis:

Long run I= f(Yd, C)

Short run I= f(Yd, C, Al, D) where Al is liquid assets and D is outstanding debt.

The line of causation remains fraught: do cash surpluses determine borrowing or does borrowing determine cash surpluses? Disentangling this remains a challenge; for example Hennessy and O'Brien (2005) in the US found that farm characteristics such as system, size, and profitability were important factors affecting farm investment and they rejected the theory that income drives farm investment.

Herr also found that investment patterns differed according to areas and activities, and suggested that evidence of new investment at particular times and subsequent size of activity (e.g. area of crop) led to the conclusion that for some amount of investment an accelerator model (Solow) may be more appropriate than a residual funds hypothesis. Waves of new investment and disinvestment and replacement investment certainly characterize investment in farms, e.g. Powell (1981), Fisher (1987).

Herr (1964) had suggested that the explanatory power of the residual funds model would all but disappear if external financing, risks, uncertainty, as well as management, which are not explicitly introduced in the residual funds hypothesis explaining farm investment, were explicitly considered. Such factors could be accounted for and measured. That is, if we could account properly for external financing and risks and uncertainty then these factors, reflected as they are in equity ratios and income variability, would become the main determinants of investment and not internal funds.

Since freeing up the financial system, the situation in agricultural financing in Australia bears out Herr's observations. Bank lending to agriculture has increased and interest charges have related to individual risk. Bank finance supplied to farms is determined strongly by loan applicants situation meeting predetermined key criteria, such as minimum equity benchmarks and thus debt servicing capacity, 5 year cash flow projections and subjective assessments of management capacity and an overall risk rating added to interest rates. Farmers nowadays face more financing choices than ever and, with a long run of low inflation years just past, farm borrowings, asset values and debt:equity ratios have increased steadily. In Makeham's Australian farm management text 'The Farming Game' which was first published in 1981, the chapter on farm finance in the revised edition of 1992 was moved from Chapter 18 in the original edition, covering sources of finance and how to work out debt servicing ability, to

Chapter three, dealing additionally with the emphases and concepts introduced by Johnson and Heady and developed by Barry, Hopkin and Baker (200.

5 Financing Matters! - Implications for farm management analysis

In this section it is argued that financing matters: the traditional narrow focus and overemphasis in much farm management analysis on optimizing input and output combinations to maximize short-period profit, whilst under-emphasizing time, risk, dynamics, finance and growth in wealth, is in effect, answering questions no-farmers are asking. Efficiency at a time and over time is a necessary but far from sufficient assessment of farm business performance. Financing over a planning period, telling all about liquidity and growth in wealth, matters just as much.

Further, and related, the characteristic of farm management analysis in Australia of emphasising individual farm activities to is misplaced. Traditionally that is where we started in what passed for farm management analysis, and, being Australian, this reflected an obsession with activity gross margins that prevailed. Even worse, often this was the full extent of what was considered to be 'farm management analysis' by technologists, in particular.

The big implication of recognizing that 'Financing Matters' is to broaden and reorder the approach to farm management analysis into something more fruitful. This entails several major changes, viz:

Starting with the balance sheet, not the farm activity, for the planning and analysis period in question

Assessing annual farm performance in terms of three criteria efficiency (profit), liquidity (cash flows) and wealth or growth (change in equity)

Applying risk analysis techniques to annual debt servicing ability, liquidity and growth prospects as well as the question of expected efficiency/expected return on capital.

An approach is to this end set out below:

(i) Balance Sheet at Start of relevant planning period:

Total Assets Controlled (including leased assets if any), Total Debt (including present value of future lease payments if leased assets), and Equity

(ii) Annual Whole Farm Profit and Growth Budget

Expected Gross Income

Minus Activity Variable Costs

Equals Expected Whole Farm Gross Margin

Minus Overhead Costs

Equals Expected Operating Profit (Efficiency when expressed as Return on Total Capital)

Minus Interest and Lease Costs

Equals Expected Net Profit (Return to Equity)

Minus Estimated Income Tax

Equals Net Profit after tax

Minus Consumption/Drawings above operator allowance (if owner operator) if any, or Add Back operator allowance above consumption/drawings

Equals Growth (change in wealth)

This formulation tells about Efficiency and Growth, and incorporates the critically important links between efficiency and gearing and growth. Liquidity must also be included in any farm management analysis. This requires the expected cash flow budget.

(iii) Expected sources of cash for the coming year/planning period

Expected uses of cash before debt servicing obligations

Equals annual Net Cash Flow before interest and principal

Minus interest

Minus Principal

Equals annual Net Cash Flow after debt servicing

Having quantified efficiency, growth and liquidity aspects of the farm management analysis in question, a check is given by the end of period balance sheet (iv below) in which change in equity calculated as equity end minus equity at start will reconcile with growth as estimated in the profit and growth budget (ii).

(iv) Expected Balance Sheet at End of year/planning period.

As in(i) but with changes in debt from repayments, changes in asset values from changes in inventories and depreciation, and changes in assets or debt arising from positive or negative expected NCF after debt servicing.

The overall effect of the calculations outlined above is to provide information about the performance of the business that is likely for the relevant planning period in terms of measures that comprise important components of the goals of the farm family — which are more than solely economic efficiency. Liquidity and growth in equity (net worth) are, commonly, at least as important and usually more important goals than economic efficiency; recognizing though that economic efficiency is a significant part of the way liquidity and growth goals can be pursued and met.

Assessing potential financial health, or stress, from changes to farm plans is as important as assessing whether a potential change to farm plan is a good investment in terms of economic efficiency (profit, return on capital). Financial health and stress derives from both income and debt situations. The ratio of debt to total assets, the term of the debt and the interest rate on debt partly determine the extent to which debt is contributing to financial health or financial stress—the rest of the story is in income, cash and assets. Investments need to be both profitable and cash flows need to be available to service debt. The point is that assessing the performance, health and stress/vulnerability of farm businesses requires a multi-dimensional perspective. Just as partial 'benchmarks' of activity performance are inadequate, partial measures of business health too are inconclusive.

6 Conclusions

Farms systems are open to financial systems. Financing matters. Analysis of questions about management of farms is a multi-dimensional task; focusing on economic efficiency only partly does the job. A financial system channeling funds efficiently from the non-farm sector to the farm sector, doing so in many and varied ways that meet the specific and different requirements of farm businesses is the key to a farm sector that is liquid and, as a consequence, makes it possible for farmers to use resources efficiently and to grow their wealth.

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